

Prescriptive Residential Additions 300 Ft² or Less, or Additions That Do Not Require HERS Field Verification

CEC-CF1R-ADD-02-E (Revised 01/15)

CALIFORNIA ENERGY COMMISSION



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|--|----------------|---------------|
| CERTIFICATE OF COMPLIANCE | | CF1R-ADD-02-E |
| Prescriptive Residential Additions 300 Ft ² or Less, or Additions That Do Not Require HERS Field Verification | | (Page 1 of 9) |
| Project Name: | Date Prepared: | |

This compliance document is only applicable to additions 300 ft² or less, or additions that do not require HERS field verification for compliance. When HERS verification is required, a CF1R-ADD-01 shall first be registered with a HERS Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ADD-02 and CF2R-ADD-02 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 ft of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ADD-01 must be completed and registered with a HERS Provider Data Registry.

Additions or alterations that utilize Closed Cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value other than 5.8 per inch, or Open Cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ADD-01 with a HERS Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

A. GENERAL INFORMATION

| | | | | | |
|-----------|--------------------------|--|-----------|--|--|
| 01 | Project Name: | | 02 | Date Prepared: | |
| 03 | Project Location: | | 04 | Building Front Orientation (deg): | |
| 05 | CA City: | | 06 | Number of Dwelling Units with Additions: | |
| 07 | Zip Code: | | 08 | Fuel Type: | |
| 09 | Climate Zone: | | 10 | Total Conditioned Floor Area (ft²) (Addition): | |
| 11 | Building Type | | 12 | Slab Area (ft²): | |
| 13 | Project Scope: | | | | |



CF1R-ADD-02-E

(Page 2 of 9)

Date Prepared:

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CF1R-ADD-02-E

Prescriptive Residential Additions 300 Ft² or Less, or Additions That Do Not Require HERS Field Verification

(Page 3 of 9)

Project Name:

Date Prepared:

C. OPAQUE SURFACE DETAILS – Non-framed (Section 150.1(c)1)

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
|--------|---------------|--------------------|--------------------|-------------------------|-------------------------------|----------|------------------------|------|-------------------------|----------|
| Tag/ID | Assembly Type | Assembly Materials | Thickness (inches) | Proposed | | | | | Required | Comments |
| | | | | Core Insulation R-value | Continuous Insulation R-value | U-Factor | Appendix JA4 Reference | | U-Factor from Package A | |
| | | | | | | | Table | Cell | | |
| | | | | | | | | | | |
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D. OPAQUE SURFACE DETAILS – Mass Walls (Section 150.1(c)1)

| 01 | 02 | 03 | 04 | 05 | 06 | | 07 | | 08 | 09 | 10 | | 11 | |
|--------|-------------------|-----------|-------------------------|----------------------------------|---------------------|----------|---------------------|----------|------------------------|------|---------------------|----------|---------------------|----------|
| Tag/ID | Walls Above Grade | Mass Type | Mass Thickness (inches) | Furring Strip Thickness (inches) | Proposed | | | | | | Required | | | |
| | | | | | Interior Insulation | | Exterior Insulation | | Appendix JA4 Reference | | Interior Insulation | | Exterior Insulation | |
| | | | | | R-value | U-factor | R-value | U-factor | Table | Cell | R-value | U-factor | R-value | U-factor |
| | | | | | | | | | | | | | | |
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CF1R-ADD-02-E

Prescriptive Residential Additions 300 Ft² or Less, or Additions That Do Not Require HERS Field Verification

(Page 4 of 9)

Project Name:

Date Prepared:

E. SLAB INSULATION (Table 150.1-A)

| 01 | 02 | 03 | 04 | 05 | 06 |
|------------|-----------------------|------------------------|-----------------------|------------------------|----------|
| Floor Type | Proposed | | Required | | Comments |
| | Insulation R-value | Insulation U-factor | Insulation R-value | Insulation U-factor | |
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- Heated slab floors require mandatory slab insulation (see Table 110.8-A).

F. RADIANT BARRIER (Section 150.1(c)2)

| 01 | 02 |
|--|----------|
| Radiant Barrier installed below the roof deck and on all gable end walls | Comments |
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A radiant barrier is required (for Climate Zones 2-15)

- Radiant barriers shall meet specific eligibility and installation criteria to receive energy credit for compliance with the Building Energy Efficiency Standards for low-rise residential buildings. Refer to RA4.2.1
- The emittance of the radiant barrier shall be less than or equal to 0.05 as tested in accordance with ASTM C1371 or ASTM E408.

For Prescriptive Compliance the attic shall be ventilated to provide a minimum free ventilation area of not less than one square foot of vent area for each 300 ft² of attic floor area with no less than 30 percent upper vents. Ridge vents or gable end vents are recommended to achieve the best performance. The material should be cut to allow for full airflow to the venting.

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CEC-CF1R-ADD-02-E (Revised 01/15)

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| Project Name: | | | | | | | | | | Date Prepared: | |

| G. ROOFING PRODUCTS (COOL ROOF) (Section 150.1(c)11) | | | | | | | | | | | |
|---|------------|-------------------------|-----------------|---------------------------|------------------------------|---------------------------|----------------------|-------------------|---------------------------|----------------------|-------------------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
| Mass Roof 25lb/ft ² or Greater | Roof Pitch | Method of Compliance | Product Type | CRRC Product ID Number | Proposed | | | | Required | | |
| | | | | | Initial Solar Reflectance | Aged Solar Reflectance | Thermal Emittance | SRI (Optional) | Aged Solar Reflectance | Thermal Emittance | SRI (Optional) |
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NOTES:

- Any roof area covered by building integrated photovoltaic panels and solar thermal panels are exempt from the above Cool Roof requirements.
- Liquid field applied coatings must comply with installation criteria from section 110.8(i)4.

| H. FENESTRATION/GLAZING AREAS ALLOWED (Section 150.2(a)1) | | | | | | | |
|--|---|--|---|--|--------------------------------|----------------------------|----------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| Addition Type ft ² | Maximum Allowed Fenestration Area For All Orientations ft ² | | Maximum Allowed West-Facing Fenestration Area Only ft ² | | Maximum Allowed U-factor | Maximum Allowed SHGC | Comments |
| | The Greater | | The Greater | | | | |
| | Maximum Calculated based on Allowed % | Maximum Calculated Allowed ft ² | Maximum Calculated based on Allowed % | Maximum Calculated Allowed ft ² | | | |
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CF1R-ADD-02-E

Prescriptive Residential Additions 300 Ft² or Less, or Additions That Do Not Require HERS Field Verification

(Page 6 of 9)

Project Name:

Date Prepared:

| I. FENESTRATION PROPOSED AREAS AND EFFICIENCIES | | | | | | | | | | | | | |
|---|---|------------|--|--------------------------------|-----------------|--|--|-------------------|---------------|--------|-------------------------|--------------------------------|-----------------------------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | |
| Tag/ID | Fenestration Type | Frame Type | Dynamic Glazing | Orientation N, S, W, E or Roof | Number of Panes | Proposed Fenestration Area ft ² | Proposed West Facing Fenestration Area ft ² | Proposed U-factor | Proposed SHGC | Source | Exterior Shading Device | Combined SHGC from CF1R-ENV-03 | |
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| 14 | Total Proposed Fenestration Area | | | | | | | | | | | | |
| 15 | Maximum Allowed Fenestration Area | | | | | | | | | | | | |
| 16 | Compliance Statement | | Total Proposed Fenestration Area ≤ Maximum Allowed Fenestration Area | | | | | | | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 17 | Total Proposed West-Facing Fenestration Area | | | | | | | | | | | | |
| 18 | Maximum Allowed West-Facing Fenestration Area | | | | | | | | | | | | |
| 19 | Compliance Statement | | Total Proposed West-Facing Fenestration Area ≤ Maximum Allowed West-Facing Fenestration Area | | | | | | | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 20 | Proposed Fenestration U-factor | | | | | | | | | | | | |
| 21 | Required Fenestration U-factor | | | | | | | | | | | | |
| 22 | Compliance Statement | | Proposed Fenestration U-factor ≤ Required Fenestration U-factor | | | | | | | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 23 | Proposed Fenestration SHGC | | | | | | | | | | | | |
| 24 | Required Fenestration SHGC | | | | | | | | | | | | |
| 25 | Compliance Statement | | Proposed Fenestration SHGC ≤ Required Fenestration SHGC | | | | | | | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

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(Page 7 of 9)

Project Name:

Date Prepared:

J. SPACE CONDITIONING(SC) SYSTEMS - HEATING/COOLING (Prescriptive section 150.2(b)).

Alterations to Space Conditioning Systems shall be exempt from HERS verification requirements as prerequisite for use of the CF1R-ADD-02 and CF2R-ADD-02 Compliance Documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from HERS verification, then a CF1R-ADD-01 shall be completed and registered with a HERS Provider Data Registry. In each row below for each dwelling unit in the building, check the box that indicates the exemption from HERS verification compliance:

- ☐ a: space conditioning system was not altered;
☐ b: less than 40 ft of ducts were added or replaced;
☐ c: (exempt from duct leakage testing) if: the existing duct system was insulated with asbestos;
☐ d: (exempt from duct leakage testing) if: the existing duct system was previously tested and passed by a HERS Rater.

| 01 | 02 | 03 | 04 |
|--------------------|----------------------------------|-----------------------------------|---|
| Dwelling Unit Name | SC System Identification or Name | SC System Location or Area Served | Exemption from HERS Verification |
| | | | <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d |
| | | | <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d |
| | | | <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d |
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CF1R-ADD-02-E

(Page 8 of 9)

Date Prepared:

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

CA Building Energy Efficiency Standards - 2013 Residential Compliance January 2015

Prescriptive Residential Additions 300 Ft² or Less, or Additions That Do Not Require HERS Field Verification

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| Project Name: | Date Prepared: | |

| | |
|--|---|
| DOCUMENTATION AUTHOR'S DECLARATION STATEMENT | |
| 1. I certify that this Certificate of Compliance documentation is accurate and complete. | |
| Documentation Author Name: | Documentation Author Signature: |
| Company: | Signature Date: |
| Address: | CEA/ HERS Certification Identification (if applicable): |
| City/State/Zip: | Phone: |
| RESPONSIBLE PERSON'S DECLARATION STATEMENT | |
| <p>I certify the following under penalty of perjury, under the laws of the State of California:</p> <ol style="list-style-type: none"> 1. The information provided on this Certificate of Compliance is true and correct. 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer). 3. That the energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 5. I will ensure that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. | |
| Responsible Designer Name: | Responsible Designer Signature: |
| Company : | Date Signed: |
| Address: | License: |
| City/State/Zip: | Phone: |

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

CF1R-ADD-02-E User Instructions

NOTE: If more space is needed, print a duplicate page and fill in.

Minimum requirements for prescriptive addition compliance can be found in Building Energy Efficiency Standards Section 150.2(a), and Table 150.1-A (Package A). Completing these forms will require that you have the Reference Appendices for the 2013 Building Energy Efficiency Standards (P400-2012-005), which contain the Joint Appendices used to determine climate zone and to complete the section for opaque surfaces. When the term CF1R is used it means the CF1R-ADD-02. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as WS-02.

Instructions for sections with column numbers and row numbers are given separately.

If any part of the addition does not comply, prescriptive compliance fails, in which case the performance (or computer) compliance approach may be used in an attempt to achieve compliance. Only the new construction is required to meet the requirements specified in this documentation. If any alterations to the existing building are occurring, those are documented on one or more of the CF1R-ALT forms.

A. GENERAL INFORMATION

1. Project Name: Identifying information, such as owner's name.
2. Date Prepared: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front orientation expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. The standards (section 100.1) include the following additional details for determining orientation:
 - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
 - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
 - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
 - West is oriented to within 45 degrees of true west, including 45 degrees north of west.
5. CA City: Legal city/town of property.
6. Number of Dwelling Units with Additions: 1 for single-family, 1 or more for multifamily.
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: Natural Gas, Liquefied Propane Gas, or Electricity.

NOTE: Prescriptive compliance only allows electricity if existing appliances are electric and natural gas is not available in the building.

9. Climate Zone: From Joint Appendix JA2.1.1.

10. Total Conditioned Floor Area: Enter the new conditioned floor area, in ft², as measured from the outside of exterior walls of the addition.
11. Building Type: Single Family (includes duplex), or Multi-Family (a building that shares common walls and common floors or ceilings).
12. Slab Area: Area of the first floor slab of the addition (if any) in ft².
13. Project Scope: 300 ft² or less, greater than 300 ft² up to 400 ft², greater than 400 ft² up to 700 ft², or greater than 700 ft² up to 1000 ft².

B. OPAQUE SURFACE DETAILS - Framed

Additions of 700 ft² or less require only R-13 wall insulation. Unless otherwise noted, all other requirements of Package A are required when using prescriptive compliance.

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof, Ceiling, Wall, Floor Over Crawlspace, or Floor Over Exterior.
3. Frame Type: Wood or Metal.
4. Frame Depth: Nominal dimensions (in inches) of framing material such as 2x4 or 2x6.
5. Frame Spacing: 16 or 24 (inches on center).
6. Proposed Cavity R-value: Insulation installed between framing members.

NOTE: Wall U-factor required for all climate zones is 0.065. This U-factor can be met by wood framed 2x4 walls with R-13 cavity + R5 continuous insulation (not interrupted by framing), R-15 cavity plus R-4 continuous insulation, or any combination of cavity and/or continuous insulation that results in a U-factor equal to or less than 0.065.

Proposed Continuous Insulation: R-value of rigid or continuous insulation (not interrupted by framing). See Table 4.3.4. of the Reference Appendices for metal frame construction.

7. Proposed U-factor: The U-factor for the proposed assembly must be less than or equal to column 10 or have an attached Area Weighted Average Calculation Worksheet (CF1R-ENV-01-E) to show that a weighted U-factor for multiple assemblies will meet the maximum value in column 10.
8. Appendix JA4 Reference Table: Table number used to determine the R-value or U-factor (e.g., an attic assembly is 4.2.1).
9. Appendix JA4 Reference Cell: Cell number used to determine the R-value or U-factor (e.g., an R-38 ceiling with 24-inch on center framing is A21).
10. Required U-factor: From Package A or from Section 150.2. Value required based on climate zone and assembly type.
11. Comments: Any notes regarding location, unique conditions, or attachments.

C. OPAQUE SURFACE DETAILS – Non-Framed

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Assembly Type: Roof, Wall.
3. Assembly Materials: SIP OSB, SIP I-Joist, see JA4 for guidance.
4. Thickness: Thickness in inches.
5. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Joint Appendix JA4 for guidance.
6. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Joint Appendix JA4 for guidance.
7. Proposed U-factor: Proposed U-factor from JA4 or CF1R-ENV-01-E. Must be less than or equal to column 10.
8. Appendix JA4 Reference Table: Table number used to determine the R-value or U-factor (e.g., a SIP wall is 4.3.2).
9. Appendix JA4 Reference Cell: Cell number used to determine the R-value or U-factor (e.g., a 4.5-inch thick OSB wall with R-18 core insulation and no continuous insulation is A5).
10. Required U-factor from Package A: Based on assembly type and climate zone.
11. Comments: Any notes regarding location, unique conditions, or attachments.

D. OPAQUE SURFACE DETAILS – Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Walls Above Grade: Yes or No.
3. Mass Type: ICF, Masonry. See JA4 for guidance.
4. Mass Thickness: Thickness (in inches) of mass.
5. Furring Strip Thickness: If furring strips are required to meet the wall R-value or U-factor shown in columns 10 & 11, indicate the thickness of the furring strip (in inches). See Table 4.3.14 of Joint Appendix 4.
6. Proposed Interior Insulation R-value or U-factor: Enter either the R-value or U-factor of proposed insulation on the inside surface of the mass wall. See column 10 for the required insulation value for the wall type selected. See JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.
7. Proposed Exterior Insulation R-value or U-factor: Enter either the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See column 11 for the required insulation value for the wall type selected. See JA4 for guidance.
8. Appendix JA4 Reference Table: Table number used to determine the R-value or U-factor (e.g., an ICF wall is 4.3.13).
9. Appendix JA4 Reference Cell: Cell number used to determine the R-value or U-factor (e.g., an 8-inch thick ICF wall with 2 inches of EPS (R-15.4) is A6).
10. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in column 6) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.
11. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in column 7) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. SLAB INSULATION

Slab edge performance specifications and installation criteria are found in Sections 150.0(l) and 150.1(c)1D (Table 150.1-A). Requirements vary by climate zone and slab conditions.

1. Floor Type: Types include slab-on-grade or raised slab.
 - Slab-on-grade floors require slab edge insulation in climate zone 16 only.
 - Raised slab must be insulated to R8 in climate zones 1, 2, 11, 13, 14 and 16, R-4 in climate zones 12 and 15, and no insulation is required in climate zones 3-10.
2. Proposed Insulation R-value: When required, insulation can be specified by either R-value or U-factor (use the same descriptor throughout Table E). When specifying an R-value complete column 2.
3. Proposed Insulation U-Factor: When required, specify the U-factor of proposed insulation in column 3.
4. Required Insulation R-value: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
5. Required Insulation U-factor: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
6. Comments: Any notes regarding location, unique conditions, or attachments.

NOTE: There is a mandatory slab edge insulation requirement for heated slab floors. Since mandatory requirements are not listed on the Certificate of Compliance, this is provided for information purposes only. The specific requirements are in Sections 110.8(g) and Table 110.8-A.

F. RADIANT BARRIER

1. Radiant Barrier installed below the roof deck and on all gable end walls: Yes or No. Radiant barriers are required in climate zones 2-15.
2. Comments: Any notes regarding location, unique conditions, or attachments.

NOTE: Radiant barrier performance specifications and installation criteria are found in Sections 110.8(j) and 150.1(c)2, and in Residential Appendix RA4.2.1.

G. ROOFING PRODUCTS (COOL ROOF)

Roofing requirements are found in Section 110.8(i) and 150.1(c)11. Depending on the climate zone and roof slope, a cool roof (defined as a minimum aged solar reflectance and thermal emittance, or a minimum SRI) may be required by Package A.

NOTE: Exceptions include (1) additions of 300 ft² or less, (2) low-slope roofs (pitch 2:12 or less) in climate zones 1-12, 14 and 16; (3) steep slope roof (pitch greater than 2:12) in climate zones 1-9 and 16; (4) roof constructions that have thermal mass over the roof membrane with at least 25 lb/ft²; and (5) any roof area covered by building integrated photovoltaic panels and solar thermal panels (the area of roof not covered by photovoltaic panels would still need to meet any applicable cool roof requirements).

1. Mass Roof 25 lb/ft² or Greater: Yes or No. Mass roofs are not required to have a cool roof even if the climate zone specifies minimum performance requirements.
2. Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 foot within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50% or more of the roof.
3. Method of Compliance: Indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance or if it is going to be based on the Solar Reflectance Index (SRI).
4. Product Type: See Cool Roof Rating Council's directory. Generally product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
5. CRRC Product ID Number: The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory at www.coolroofs.org/products/results. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
6. Proposed Initial Solar Reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged solar reflectance is available.
7. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculation worksheet located on the California Energy Commission website or the aging equation $\rho_{\text{aged}} = [0.2 + \beta(\rho_{\text{initial}} - 0.2)]$, where ρ_{initial} = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

| Product Type | CRRC Product Category | β |
|-----------------------|-----------------------------|---------|
| Field-Applied Coating | Field-Applied Coating | 0.65 |
| Other | Not A Field-Applied Coating | 0.70 |

8. Proposed Thermal Emittance: From the product specification default value. If using a calculated SRI, enter the Thermal Emittance used to calculate SRI.
9. Proposed SRI: It is optional to meet the SRI but if chosen to do so, use the Solar Reflectance Index (SRI) Calculation Worksheet found on the California Energy Commission website <http://www.energy.ca.gov/title24/>.
10. Required Aged Solar Reflectance: Based on climate zone and roof slope.
11. Required Thermal Emittance: Based on climate zone and roof slope.
12. Required SRI: Based on climate zone and roof slope.

If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.

H. FENESTRATION/GLAZING AREAS ALLOWED

Fenestration areas are expressed in square feet, not square inches. The climate zone and size of the addition will affect the area of fenestration (also known as glazing) allowed. If limited to 20%, for example, this is calculated as Conditioned Floor Area (CFA) of the addition x 0.20 = total ft² of fenestration allowed.

For additions that are 1000 ft² or less, but greater than 700 ft², the limit of total fenestration is the greater of 175 ft² or 20% of the CFA of the addition.

For additions that are 700 ft² or less, but greater than 400 ft², the limit of total fenestration is the greater of 120 ft² or 25% of the CFA of the addition.

For additions that are 400 ft² or less, the limit of total fenestration is the greater of 75 ft² or 30% of the CFA of the addition.

For additions that are 1000 ft² or less, when west-facing fenestration is limited (in climate zones 2, 4, and 6-16), it is limited to either 70 ft² (for additions greater than 700 ft²) or 60 ft² (for additions that are 700 ft² or less).

1. Addition Type ft²: Based on "Project Scope." The addition's area in square feet: ≤400 ft², >400 ft² to ≤700 ft², or >700 ft² to ≤1,000 ft².

(2. through 7.—These fields will be completed based on conditioned floor area of the addition and/or climate zone. The values in these fields will be entered into Section I.)

Maximum allowed fenestration area for all orientations is the greater of the values in columns 2 or 3:

2. Maximum Calculated based on Allowed %: The addition's CFA multiplied by the allowed %. The maximum total fenestration area is 30% for additions up to 400 ft², 25% for additions greater than 400 ft² but no greater than 700 ft², and 20% for additions greater than 700 ft².
3. Maximum Calculated Allowed ft²: The maximum total fenestration area is 75 ft² for additions up to 400 ft², 120 ft² for additions greater than 400 ft² but no greater than 700 ft², and 175 ft² for additions greater than 700 ft².

Maximum allowed west-facing area is the greater of the values in columns 4 or 5:

4. Maximum Calculated based on Allowed %: The maximum west-facing fenestration area (in climate zones 2, 4, and 6-16) is 5% for additions greater than 700 ft².
5. Maximum Calculated Allowed ft²: The maximum west-facing fenestration area (in climate zones 2, 4, and 6-16) is 60 ft² for additions no greater than 700 ft², and 70 ft² for additions greater than 700 ft².

| Addition CFA: | ≤ 400 ft ² | | > 400 ft ² to ≤ 700 ft ² | | > 700 ft ² to ≤ 1,000 ft ² | |
|------------------------------|-----------------------|-------------------------|--|-------------------------|--|-------------------------|
| | The Greater Of: | | The Greater Of: | | The Greater Of: | |
| Orientation | Percentage | Area (ft ²) | Percentage | Area (ft ²) | Percentage | Area (ft ²) |
| West-facing (CZs 2, 4, 6-16) | - | 60 | - | 60 | - | 70 |
| All Orientations | 30% | 75 | 25% | 120 | 20% | 175 |

NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west (in either direction), including 45 degrees north of west, any skylights oriented west, and skylights facing any direction with a pitch of less than 1:12.

6. Maximum Allowed U-factor: Maximum area-weighted average of 0.32 for all climate zones.
7. Maximum Allowed SHGC: Maximum area-weighted average of 0.25 for climate zones 2, 4, and 6-16; otherwise N/A.
8. Comments: Any notes regarding location, unique conditions, or attachments.

I. FENESTRATION PROPOSED AREAS AND EFFICIENCIES

1. Tag/ID: Provide a name or designator for each unique type of fenestration surface. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) such as Window-1, Skylight-1, etc. to identify each surface. It should also be consistently used on the other forms in the compliance documentation.
2. Fenestration Type: Indicate the type of fenestration construction e.g., Fixed Window, Operable Window, Greenhouse/Garden Window, Curtain Wall/Storefront, or Glazed Doors. For Skylights use: Glass Curb Mounted, Glass Deck Mounted, or Plastic Curb Mounted.

NOTE: Doors with glazing are counted in one of two ways. The entire area of a door with 50% or more glazing is considered fenestration. A door with less than 50% glazing can be considered as all fenestration, or can be calculated as the actual glass area with a 2-inch (0.17 ft) frame all around.

3. Frame Type: Vinyl, Wood, Metal, Metal Thermal Break, Clad, Fiberglass, or None.
4. Dynamic Glazing: Indicate whether the fenestration has an integrated shading device, chromogenic glazing, or none for no dynamic glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation: Orientation can be North, East, South, West, Roof, or degrees. If documentation is for a building that may be built in any direction, in a climate zone that limits west-facing fenestration, complete this section assuming the side of the building with the most fenestration faces west.

NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west, excluding 45 degrees south of west; any skylights oriented west; and skylights facing any direction with a pitch of less than 1:12.

6. Number of Panes: Indicate the number of panes for each Tag/ID; is it a single, double, or triple pane window? Enter either: 1, 2, or 3 to represent the panes.
7. Proposed Fenestration Area ft²: The size of any windows, doors with glass, or skylights within the floor area of the addition (combine windows with the same characteristics). Indicate the area (in square feet) of each exterior fenestration type, including west-facing fenestration.
8. Proposed West Facing Fenestration Area ft²: In climate zones 2, 4, and 6-16, enter the size of any west-facing windows, doors with glass, or skylights within the floor area of the addition. Indicate the area (in square feet) of each exterior west-facing fenestration type separately.
9. Proposed U-factor: Enter
 - (a) the NFRC U-factor based on the proposed brand and type of fenestration using National Fenestration Rating Council (www.nfrc.org) certified values, or
 - (b) the default value from Table 110.6-A, or
 - (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only).

If any products (other than the exceptions noted below) have a higher U-factor than 0.32, first complete a CF1R-ENV-02-E to calculate the area-weighted average U-factor, which must be 0.32 or less, and attach it to the CF1R-ADD-01-E.

- NOTES: (1) An exception allows up to 3 ft² of tubular skylights and up to 3 ft² of glazing in a door without having to meet the maximum U-factor; this field can be N/A. For up to 16 ft² of skylight area this value can be 0.55 or less.
- (2) Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 10.

10. Proposed SHGC: In climate zones 2, 4, and 6-16, enter

- (a) the NFRC SHGC based on the proposed brand and type of fenestration using National Fenestration Rating Council (www.nfrc.org) certified values, or
- (b) the default value from Table 110.6-B, or
- (c) the NA6.3 alternate default SHGC (for non-rated site-built fenestration only).

If any products (other than the exceptions noted below) have a higher SHGC than 0.25 in a climate zone with a maximum SHGC value, first complete a CF1R-ENV-02-E to calculate the area-weighted average SHGC, which must be 0.25 or less, and attach it to the CF1R-ADD-01-E.

- NOTES: An exception allows up to 3 ft² of tubular skylights and up to 3 ft² of glazing in a door without having to meet the maximum SHGC; this field can be N/A. For up to 16 ft² of skylight area this value can be 0.30 or less.

11. Source: The source of the U-factor and SHGC data for the fenestration product—indicate whether NFRC, Tables 110.6-A and 110.6-B, or Equations NA6-1 and NA6-2.

12. Exterior Shading Device: If exterior shading devices are used to meet the SHGC requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03-E Solar Heat Gain Coefficient Worksheet) and attach the CF1R-ENV-03-E.

- NOTES: An exterior shading device is not used for products with an NFRC rated U-factor and SHGC based on a factory integrated shading device.

13. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the SHGC value of the fenestration to meet the prescriptive SHGC requirements (as indicated in column I. 12), indicate the SHGC calculated on form CF1R-ENV-03 and attach the form for each window with an exterior shading device.

| | |
|--|-----------------|
| CERTIFICATE OF COMPLIANCE – USER INSTRUCTIONS | CF1R-ADD-02-E |
| Prescriptive Residential Additions 300 Ft ² or Less, or Additions That Do Not Require HERS Field Verification | (Page 10 of 12) |

To determine compliance with allowable fenestration areas and efficiencies, complete rows 14-25.

14. Total Proposed Fenestration Area: The sum of column I. 7.
15. Maximum Allowed Fenestration Area: From section H., report the greater value of column 2 or 3.
16. Compliance Statement: Verify whether I. 14 is less than or equal to I. 15. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration areas must be reduced, or compliance may be attempted using the performance approach.
17. Total Proposed West-Facing Fenestration Area: The sum of column I. 8.
18. Maximum Allowed West-Facing Fenestration Area: From section H., report the greater value of column 4 or 5.
19. Compliance Statement: Verify whether I. 17 is less than or equal to I. 18. Indicate Yes or No. If No, the project fails prescriptive compliance—specified west-facing fenestration areas must be reduced, or compliance may be attempted using the performance approach.
20. Proposed Fenestration U-factor: If necessary, report the area-weighted average U-factor from the completed CF1R-ENV-02-E. Otherwise, report the largest value from column I. 9.
21. Required Fenestration U-factor: From section H., report the value of column 6.
22. Compliance Statement: Verify whether I. 20 is less than or equal to I. 21. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration U-factors must be reduced, or compliance may be attempted using the performance approach.
23. Proposed Fenestration SHGC: If necessary, report the area-weighted average SHGC from the completed CF1R-ENV-02-E. Otherwise, report the largest value from columns I. 10 and I. 13.
24. Required Fenestration SHGC: From section H., report the value of column 7.
25. Compliance Statement: Verify whether I. 23 is less than or equal to I. 24. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.

J. SPACE CONDITIONING SYSTEMS - HEATING/COOLING

If an existing space system will condition an addition, the prescriptive requirements do not apply to that system (Exception 4 to Section 150.2(a)). The enforcement agencies may require verification that the capacity of the existing heating system is adequate to meet the added load of the additional conditioned floor area. Since there is no health and safety code requirement to provide cooling, the enforcement agency will not ask for verification that the capacity of the existing system is adequate to meet the added load of the additional conditioned floor area.

If a new system is installed complete a Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02).

1. Dwelling Unit Name: Name of dwelling unit or any other identifying name.
2. SC System Identification or Name: Name of the Space Condition (SC) System or any other identifying name.
3. SC System Location or Area Served: Zone, or area, served by the Space Conditioning (SC) System.
4. Exemption from HERS Verification: Section 150.2(b)1E

- a. Space Conditioning (SC) System was not altered.
- b. Duct systems with less than 40 linear feet in unconditioned spaces as determined by visual inspection.
- c. Existing duct systems constructed, insulated or sealed with asbestos.
- d. Duct systems that have been documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Residential Appendix RA3.1

K. WATER HEATING SYSTEMS

Water heating compliance for an addition is described in Section 150.2(a). When a water heater is added as part of an addition in a single dwelling, a gas or propane water heater, with a storage tank of 60 gallons maximum or instantaneous, can be used. Electric water heaters can only be used if gas or propane is not available and no recirculation pump can be used.

1. Dwelling Unit Name: Name of dwelling unit or any other identifying name.
2. Water Heating System Identification or Name: Name of the Water Heating System or any other identifying name.
3. Water Heating System Location or Area Served: Zone, or area, served by the Water Heating System.
4. Water Heating System Type: Domestic Hot Water (DHW), Hydronic, Combined Hydronic, or Central. DHW is for domestic hot water, hydronic is a water heating system used for space heating only; combined hydronic is when the water heater will provide both space conditioning and domestic hot water.
5. Water Heater Type: For non-central systems only Small Storage or Small Instantaneous are allowed. For central systems pick from Large Storage, Small Storage, Heat Pump, Boiler, Large Instantaneous, Small Instantaneous, or Indirect.
6. Number of Water Heaters in System: In single-family and multi-family with water heaters in each dwelling unit the value is 1. For multi-family central systems serving multiple dwelling units enter the total number of water heaters.
7. Water Heater Storage Volume: Tank capacity in gallons. For individual water heaters for a dwelling unit this will be 60 gallons or less. If instantaneous, enter n/a. For multi-family central systems enter the total storage volume.
8. Fuel Type: Gas, Propane, or Electric (Only if natural gas is not available)
9. Rated Input Type: Enter the equipment input rating type, for gas or propane fired system units are Btuh, for electric fired system the units are kW.
10. Rated Input Value: Enter the numeric value of rated input.
11. Heating Efficiency Type: Energy Factor, AFUE, or Thermal Efficiency. From product literature or a California Energy Commission directory.
12. Heating Efficiency Value: Enter the value from product literature or a California Energy Commission directory
13. Standby Loss (%): Applies only to large storage water heaters. Enter n/a for small storage or instantaneous water heaters.
14. Exterior Insulation R-Value: Enter the R-value if exterior insulation on the storage tank is installed
15. Back-Up Solar Savings Fraction: If compliance requires a back-up solar system, indicate the solar contribution (e.g., 0.30). External calculations are required.

DOCUMENTATION DECLARATION STATEMENTS

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.

REFERENCES

1. Water Heaters:

Section 150.1(c) allows a limited number of conditions for water heating. If conditions other than these are proposed, the prescriptive compliance approach cannot be used:

- A. 150.1(c)8A one gas or propane storage water heater, up to 75,000 Btu/hour input (typically 50 gallons or less), with either no recirculating system or a demand recirculation system with manual controls. If the Energy Factor is less than or equal to the federal minimum, it must have an R-12 external wrap. See D. below.
- B. 150.1(c)8B one gas or propane instantaneous (tankless) water heater with an input of 200,000 Btu/hour or less, no storage tank, and either no recirculating system, or a demand recirculation system with manual controls. .
- C. 150.1(c)8C a central water-heating system that includes the following components (1) gas or propane water heaters, boilers or other water heating equipment, (2) a water heating recirculation loop that meets the requirements of Section 110.3(c)2 and Section 110.3(c)5 equipped with automatic controls for the recirculation pump based on measurement of hot water demand and hot water return temperature, and if more than 8 dwelling units, two recirculation loops each serving half of the building; (3) a solar water-heating system with a minimum solar savings fraction of 0.20 in climate zones 1 through 9 or a minimum solar savings fraction of 0.35 in climate zones 10 through 16 (installation criteria is in Reference Residential Appendix RA4).
- D. 150.1(c)8D if natural gas is not available, an electric-resistance storage, or instantaneous water heater with additional criteria that it be located inside the conditioned space, has no recirculation pumps, and has a solar water-heating system with a minimum solar savings fraction of 0.50 (installation criteria is in Reference Residential Appendix RA4)